

REMARKS

The present application stands with pending claims 1-37, where claims 1, 16, 29, 33 and 36 are independent. Applicant herein adds new claims 38-39 depending from claim 13 and 26 respectively to recite further features of the invention.

As a preliminary matter, Applicant appreciates the Examiner's acknowledgment of allowable subject matter in claims 6-13, 16-28 and 30.

Claims 6, 13 and 26 stand objected to due to informalities. In response, Applicant amended claims 6, 13 and 26 as well as claims 11, 29 and 30 to remove informalities from the claims. These formality amendments do not narrow the scope of these claims in any way. Accordingly, Applicant respectfully requests that the objection be withdrawn.

Claims 1-5, 14, 15, 29 and 31-37 stand rejected under 35 U.S.C. §102(b) as being unpatentable over Junichi (JP 59-109370). As an aside, attached herewith this amendment is a copy of the reference JP 59-109370 at issue. Note on this publication, the drawing is rotated 90 degrees and appears to be more clearly understandable compared to the copy that the Examiner possesses.

In response to the rejection, first, Applicant respectfully traverses because the cited reference does not disclose or suggest a substantially planar configuration that is generally parallel to the plane of the ink channels as recited in claim 1. Instead, in Junichi, the two ink channels (11) disclosed by Junichi are placed one on top of another rather than side by side. The two ink channels merely appear to form a plane that is perpendicular to the heater elements (6) – which assumes *arguendo* that the heater element (6) is planar (in and out of the paper). Absolutely no suggestion exists in Junichi of a “common plane” of the ink

channels that is parallel to the heaters (6). Therefore, Junichi does not disclose or suggest all of the features of claim 1. For this reason alone, Applicant respectfully requests that the §102 (b) rejection based on Junichi of claim 1, and its depending claims, claims 2-5 and 14-15, be withdrawn.

Applicant further submits that the heaters (6) in Junichi do not define a “substantially planar configuration” and do not “extend in a plane” as recited in claim 1 anyway, so that the construct above is actually impossible. The single cross section of Junichi does not disclose the shape of the heater besides the rectangular cross-section. For this additional reason, Applicant respectfully requests that the §102 (b) rejection of claims 1-5 and 14-15 be withdrawn.

In addition, regarding claim 4 and 5 separately, Junichi does not disclose an ink heater that “includes a first electrode and a second electrode” as recited in claim 4 (claim 5 depends from claim 4, and therefore includes this feature, and also adds first and second leads connected to the electrodes). Although on the bottom of page 2 of the Office Action the Examiner alleges that Junichi discloses “first and second electrodes (2),” a review of the abstract and the drawing reveals that the figure elements (2) are piezoelectric elements (2) and NOT electrodes. There is no disclosure in Junichi of the claimed electrodes.

The Examiner further alleges that Junichi discloses “a first lead and a second lead (4), and wherein a voltage potential is applied across the first and second leads.” However, the Junichi abstract states that “An FPC 4 for wiring these component parts is pressed by a packing 5.” Thus, even assuming *arguendo* that this may be interpreted as disclosing “leads” where (4) is depicted, these leads are on two different sides of two separate heaters.

Under no reasonable interpretation may these “leads” be construed as satisfying the claimed limitation of “a first electrode and a second electrode located on the *first side* of the thermistor material” as recited in claim 4 (emphasis added). For these reasons, Applicant respectfully requests that the §102 (b) rejection of claims 4 and 5 be withdrawn.

Applicant traverses separately regarding claims 14, 15. This rejection was not explained by the Examiner and is not understood. Claim 14 depends from Claim 13, which further depends from Claim 12. Claims 12 and 13 are objected to as being dependent upon a rejected base claim, but the Examiner has indicated that they would be allowable if rewritten in independent form. If Claims 12 and 13 are deemed allowable in this regard, the same should apply to Claim 14.

Regarding claims 29, 31 and 32, Applicant repeats the arguments above from claims 1 and 4. Specifically, claim 29 recites a planar member of thermistor material, which is not disclosed or suggested by Junichi. To conclude that the shape of the heaters (6) in Junichi discloses this feature is an unfair and unreasonable conclusion formed by the improper use of hindsight after studying the present invention.

In addition, as explained above with respect to Claim 4, Junichi does not disclose the claimed “first and second electrodes extending on one side of said planar member” as recited in claim 29, and included in depending claims 31 and 32, which also both recite the first and second electrodes. Specifically, there is no disclosure of electrodes in Junichi, and even accepting the Examiner’s interpretation regarding the FPC (4) serving as leads, there is no disclosure of the electrodes/leads being on one side of a planar member. Rather, Junichi shows the FPC 4 extending on opposite sides of two different heaters. For these reasons,

Applicant respectfully requests that the §102 (b) rejection based on Junichi of claim 29 and its depending claims 31-32 be withdraw.

Regarding claim 33 and its depending claims 34 and 35, as explained above with respect to various claims, Junichi simply does not disclose electrodes as recited in claims 33 and 34 either. For example, Junichi does not and cannot disclose the claimed step of "attaching a plurality of electrodes to the ink heater." Accordingly, Applicant respectfully requests that the §102(b) rejection of claim 33 and depending claims 34-35 based on Junichi be withdrawn.

Regarding claim 36 and depending claim 37, Junichi does not disclose or suggest "a plurality of ink channels generally disposed in a common plane, the method comprising the step of using a planar ink heater generally parallel to said common plane" as recited in claim 36 as amended. Instead, Junichi merely discloses two nozzles, one above the other, each with its own heater. Any plane formed by the two nozzles (11) would not extend parallel to the heater (6). For this reason, Applicant requests that the §102 (b) rejection based on Junichi and of claim 36 and depending claim 37 be withdrawn.

For all of the above reasons, Applicants request reconsideration and allowance of the claimed invention. The Examiner should contact the undersigned attorney if an interview would expedite prosecution.

Respectfully submitted,

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EXHIBIT A

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MARKED-UP VERSION OF AMENDED CLAIMS SHOWING CHANGES MADE
INCLUDING NEWLY ADDED CLAIMS

6. (Amended Twice) The print head of claim 4, wherein the ink heater include a first edge and a second edge, the first edge is located opposite from the second edge, the first and second [edge] edges extend in a direction which is substantially perpendicular to the plurality of ink channels, the first electrode extends along the first edge and the second electrode extends along the second edge, wherein the first and second electrodes are opposite from one another and substantially parallel.

11. (Amended) The print head of claim 4, wherein the ink heater includes a first longitudinal edge, a second longitudinal edge, a first transverse edge and a second transverse edge, the first longitudinal edge is located opposite from the second longitudinal edge, the first and second longitudinal edges extend in a direction which is substantially perpendicular to the plurality of ink channels, the first transverse edge is located opposite from the second transverse edge, the first and second transverse edges extend in a direction which is substantially parallel to the plurality of ink channels, the [first] second electrode is substantially U-shaped and extends along the first and second longitudinal edges and the first transverse edge, and the first [second] electrode extends in an area defined by the U-shaped [first] second electrode and in a direction parallel to the first and second longitudinal edges.

13. (Amended) The print head of claim 12, wherein the main body portion includes a recess and [a] first and second [groove] grooves extending in a longitudinal direction from the recess, wherein the recess receives the thermistor material and the first and second grooves receive the first and second leads, respectively.

26. (Amended) The print head of claim 16, wherein the main body portion includes a recess and [a] first and second [groove] grooves extending in a longitudinal direction from the recess, wherein the recess receives the thermistor material and the first and second grooves receive the first and second leads, respectively.

29. (Amended) A thermistor for heating ink in an ink jet print head, comprising:
a planar member made of thermistor material having a positive temperature coefficient; and
first and second electrodes [extend] extending on one side of said planar member.

30. (Amended Twice) The thermistor of claim 29, further comprising a first edge and a second edge, the first edge is located opposite from the second edge, the first electrode

[extends] extending along the first edge and the second electrode [extends] extending along the second edge, the first and second electrodes are opposite from one another and substantially parallel.

36. (Amended) A method of maintaining the ink in an ink jet print head at a uniform temperature wherein the ink jet print head has a plurality of ink channels generally disposed in a common plane, the method comprising the step of using [an] a planar ink heater generally parallel to said common plane and made of a thermistor material.

38. (New) The print head of claim 13, wherein the thermistor material is secured to the intermediate body portion with thermally conductive adhesive.

39. (New) The print head of claim 26, wherein the thermistor material is secured to the intermediate body portion with thermally conductive adhesive.